19. (Amended) An elevator door system as defined in claim 18, wherein the header bracket is disposed below the upper edge of the elevator car and generally above the door opening, the header bracket extending generally between first and second sides of the elevator car, and wherein the flat drive motor is mounted on the header bracket.

20. (Amended) An elevator door system as defined in claim 18, wherein the flat drive motor is disposed generally adjacent to a first side of the elevator car.

REMARKS

These remarks are responsive to the Office Actions dated May 30, 2002 in which the drawings were objected to and claims 16-21 were rejected.

Applicants request favorable reconsideration of the subject application in view of the foregoing amendments and the following remarks. The foregoing amendments are believed to place the application into condition for allowance, or at least in better form for appeal. The amendments were not earlier presented because Applicants earnestly believed the claims to be allowable in their earlier form. Accordingly, Applicants request entry and consideration of the amendments.

Applicants have cancelled non-elected claims 2, 7-15 and 22-38.

The Examiner objected to the drawings for failing to show every feature of the claimed invention. In particular the Examiner objected to the header bracket extending generally between the first and second sides of the door opening in claim 19 and the flat motor disposed generally adjacent to the first side of the door opening in claim 20.

Applicants have amended claim 19 to claim the header bracket extending generally between the first and second sides of the elevator car. Support for this amendment can be found on page 4, line 12 and is illustrated in Figure 1 as header bracket (26) and first and second sides (30, 32) of elevator car (12).

Applicants have amended claim 20 to claim the flat drive motor disposed generally adjacent to the first side of the elevator car. Support for this amendment can be found on page 4, line 13 and is shown in Figure 1 as drive motor (34) and fist side (30) of elevator car (12).

Based on the foregoing discussion Applicants respectfully request withdrawal of the objection to the drawings.

The Examiner rejected claims 16, 17 and 21 under 35 USC 103(a) as being obvious over Yoshikowa (JP 402081888) in view of Aulanko et al (5,665,944) and Kershaw et al (4,884,844).

The Examiner cited Yoshikawa for teaching a car, at least one elevator door on the front face, first and second sheaves disposed to the first and second sides of the door opening, a rope forming a closed loop around the sheaves wherein the door is attached to the rope and a drive motor on the front portion of the car coupled to the elevator door. The Examiner cited Aulanko et al. as teaching a flat motor integrated onto a sheave and further states that it would have been obvious to one of ordinary skill in the art to modify the apparatus of Yoshikawa by adding the flat motor onto one of the sheaves shown in Aulanko et al. The Examiner further cites Kershaw et al. as inherently teaching a flat motor disposed on the front face of an elevator car. The Examiner states that is would have been obvious to one skilled in the art to further modify the apparatus of Yoshikawa by using the motor of Kershaw et al. in order to reduce the size of the motor to make the required torque.

Applicants have amended claim 16 to clarify that the sheave and integrated flat motor is mounted on the front face of the elevator car. Yoshikawa does not teach a flat motor integral to a sheave located on the front face of an elevator car. The motor 9a is located on top of the elevator car, requiring increased clearance at the top of the hoistway. Applicants' invention allows the motor to be removed from the top of the car reducing the required clearance at the top pf the hoist way.

Furthermore, Applicants respectfully disagree because there is no motivation to modify the references (MPEP 2143.01). Aulanko et al describes an elevator machinery comprising a motor and a traction sheave designed to move the elevator ropes wherein the two traction sheaves provided are attached to a rotor by means of fixing elements.

There is no suggestion by Aulanko et al or Yoshikawa that the drive system of Yoshikawa consisting of a motor, a first drive belt and a intermediate drive gear can be replaced by the elevator drive motor of Aulanko et al. Assuming that Aulanko et al could be combined with Yoshikawa there is only a suggestion that the drive motor, located on top of the car, and intermediate gear could be replaced.

Kershaw et al teaches a double stage taumel gear reduction unit used in conjunction with a flat motor for positioning a seat back of an automotive car seat. Again there is no motivation to replace the entire drive system of Yoshikawa to arrive at the subject invention. Kershaw et al only suggests that the motor and intermediate gear could be replaced with an integrated motor and belt driver.

For the foregoing reasons, reconsideration and withdrawal of the rejection of claim 16 as obvious over Yoshikawa in view of Aulanko et al and Kershaw et al is respectfully requested.

Since claims 17 through 21 depend either directly or indirectly from claim 16, they are patentable for the same reasons. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

The Examiner rejected claims 16, 17 and 21 under 35 USC 103(a) as being unpatentable over Yoshinobu (JP 4-06329375) in view of Aulanko et al. The Examiner cites Figure 6 of Yoshinobu as teaching a an elevator car having a front face, elevator doors, first and second sheaves, with a closed loop rope between a drive motor on a front portion of the car driving one of the sheaves via a pulley.

The Examiner cited Aulanko et al. as teaching a flat motor integrated onto a sheave and further states that it would have been obvious to one of ordinary skill in the art to modify the apparatus of Yoshinobu by adding the flat motor onto one of the sheaves shown in Aulanko et al

As stated above, Applicants have amended claim 16 to clarify that the sheave and integrated flat motor is mounted on the front face of the elevator car. Yoshinnobu does not teach a flat motor integral to a sheave located on the front face of an elevator car. The motor 13 is located on top of the elevator car, requiring increased clearance at the top of the hoistway. Applicants' invention allows the motor to be removed from the top of the car reducing the required clearance at the top pf the hoist way.

Furthermore, Applicants respectfully disagree because there is no motivation to modify the references (MPEP 2143.01). Aulanko et al describes elevator machinery comprising a motor and a traction sheave designed to move the elevator ropes wherein the two traction sheaves provided are attached to a rotor by means of fixing elements.

Yoshinobu teaches a drive motor located on the top of the car with a pulley driving a first sheave, which in turn drives a rope for positioning the doors. The first sheave appears to have gear reduction feature. There is no suggestion by Aulanko et al. or Yoshinobu that the drive

system of Yoshinobu consisting of a drive motor, drive belt, and master shaft can be replaced by the elevator drive motor of Aulanko et al.

For the foregoing reasons, reconsideration and withdrawal of the rejection of claim 16 as obvious over Yoshinobu in view of Aulanko et al is respectfully requested.

Since claims 17 through 21 depend either directly or indirectly from claim 16, they are patentable for the same reasons. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

The Examiner rejected claims 18-20 under 35 USC 103(a) as being unpatentable over Yoshinobu in view of Aulanko et al as applied to claim 17 above and further in view of Tracey (5,701,973). The Examiner cites Tracey as showing a header mounted between the top of the car and the top of the door opening and that it would have been obvious to modify the apparatus of Yoshinobu by adding the header bracket of Tracey.

Applicants respectfully disagree. As discussed above Applicants believe that claim 16 is allowable and therefore claims 18-20, which depend either directly of indirectly there from are also patentable and therefore Applicants respectfully request withdrawal of the subject rejection. Furthermore Yoshinobu clearly shows a motor located on top of the car. As discussed above there is no motivation to combine Aulanko et al and Yoshinobu therefore there is no motivation to combine Tracey and Yoshinobu because the drive of Yoshinobu must be located on top of the car.

The Examiner rejected claims 16 and 21 under 35 USC 103(a) as being obvious over Kappenhagen (4,149,615) in view of Tracey (5,701,973). The Examiner cites Kappenhagen as teaching a drive motor disposed on a front portion of the elevator car and integrated onto one of the sheaves. The Examiner cites Kershaw as teaching a flat motor.

Applicants respectfully disagree Kappenhagen clearly shows that the motor is located on the top of the car and extends rearwardly from the front of the car over a portion of the top of the car, under cover (80). Furthermore there is nothing in Tracey that indicates the motor is flat. Tracey states in column 4, line 50 that the gearmotor (34) is mounted such that the axis of rotation of its drive shaft is parallel to the mounting plate and that a right angle gearbox is used to achieve rotation of an axis perpendicular to the mounting plate.

Therefore, Applicants respectfully request withdrawal of the subject rejection and allowance of claim 16 and claims 17-21, which depend either directly or indirectly therefrom. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

In as much as neither the structure nor function of Applicants' invention has been anticipated or made obvious, Applicants respectfully request reconsideration of Claims 16-21 and, upon such reconsideration, allowance of Claims 16-21.

Please charge any fees for this statement to Deposit Account No. 15-0750, Order No. OT-4224.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

CLAIMS

16. (Twice Amended) An elevator door system comprising:

an elevator car having a front face defining a door opening;

at least one elevator door coupled to the front face of the elevator car for movement between as open position exposing the door opening and a closed position covering the door opening;

a first sheave and second sheave disposed on the front face of the elevator car;

a rope forming a closed loop about the first and second sheaves wherein the door is attached to the rope; and

at least one flat drive motor [disposed on a front portion of the elevator car and] integrated onto one of the sheaves such that the drive motor is drivingly coupled to the rope for moving the elevator door between the open and closed positions.

19. (Amended) An elevator door system as defined in claim 18, wherein the header bracket is disposed below the upper edge of the elevator car and generally above the door opening, the header bracket extending generally between first and second sides of the [door opening] elevator car, and wherein the flat drive motor is mounted on the header bracket.

20. (Amended) An elevator door system as defined in claim 18, wherein the flat drive motor is disposed generally adjacent to a first side of the [door] elevator car.